Eglinton Valley Report

2019-2020

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Cover: Eglinton 2.0 predator control operation. *Photo: Bex Jackson DOC*

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Contents

1 Summary

Following the 2019 beech mast event a landscape scale predator control 1080 operation took place in September 2019 to control rat and stoat plagues. This successfully reduced rat tracking indices to 1%. In the past mast cycle moderate rat tracking in the post mast winter was linked to poor recruitment in long tailed bats, and a decision was made to undertake a second predator control operation in the Eglinton should February 2020 tracking be >5%. This was the case, and a second smaller 1080 operation was undertaken in May 2020 to keep rat numbers low over the winter of 2020. In general, threatened species populations are on the rise in the valley. Assessing the success of the double 1080 operations in protecting long tailed bats will need to wait until the results of the 2021 monitoring season.

2 Overview

The Eglinton Valley is one of the few extensive lowland areas of mixed southern beech forest in New Zealand. It supports populations of more than 30 threatened plants and animals and some rare plant communities and has a diverse bird fauna compared to other mainland forests of the South Island. The valley held a relatively large number of mohua until the population crashed following two successive mast-driven rat plagues in 2000 and 2001. Mohua numbers have been boosted by four translocations between 2010 and 2017, without which they would likely have gone locally extinct.

The valley contains two species of endemic bat, the nationally critical long-tailed bat and one of two mainland population of the southern lesser short-tailed bat recently reclassified as recovering. There is a significant population of nationally endangered black-fronted terns on the Eglinton River, with numbers increasing steadily since valley-wide pest control was initiated. Other bird species such as yellow-crowned kakariki, falcon, kea, kaka, robins and ruru are found in good numbers. Lizard diversity appears low, with only two species recorded, but there has been little search effort to date.

The Department of Conservation undertakes continuous stoat and cat control as well as periodic rat and possum control when required to protect this ecosystem. There are several species monitoring projects in the area as well as long term research being undertaken by the Biodiversity Group, DOC. This report summarises the management activities in the valley between July 2019 and June 2020.

Stoat control has been carried out in the Eglinton Valley since 1998. The original trap network of 266 traps was expanded in 2008 and further again in 2017 and now comprises 433 DOC 150 and DOC200 traps. Bait station operations have been undertaken since 2006 growing larger over time until they were largely superseded by aerial 1080 operations which started in 2014. Rat abundance is monitored using standard tracking tunnel methods and is typically carried out quarterly each year. Seedfall monitoring is also undertaken annually.

3 Predator Control

3.1 Mustelid Control

The trap network in the Eglinton Valley is comprised mainly of double-set stainless DOC 150/200 traps. A few lines of old style single-set DOC 200 traps remain, and these are slowly being upgraded to double-sets. There are also 8 DOC250 traps for ferrets. These traps provide year round mustelid protection for the majority of the valley floor where most kaka, tern, bat and mohua breeding takes place.

A total of 74 stoats were caught in the year from July 2019 through to June 2020, up on 58 in the previous year. During the same period 54 weasels and 4 ferrets were caught. A reduced number of trap checks occurred over the last year, with only 6 trap checks undertaken, down on the usual 9.

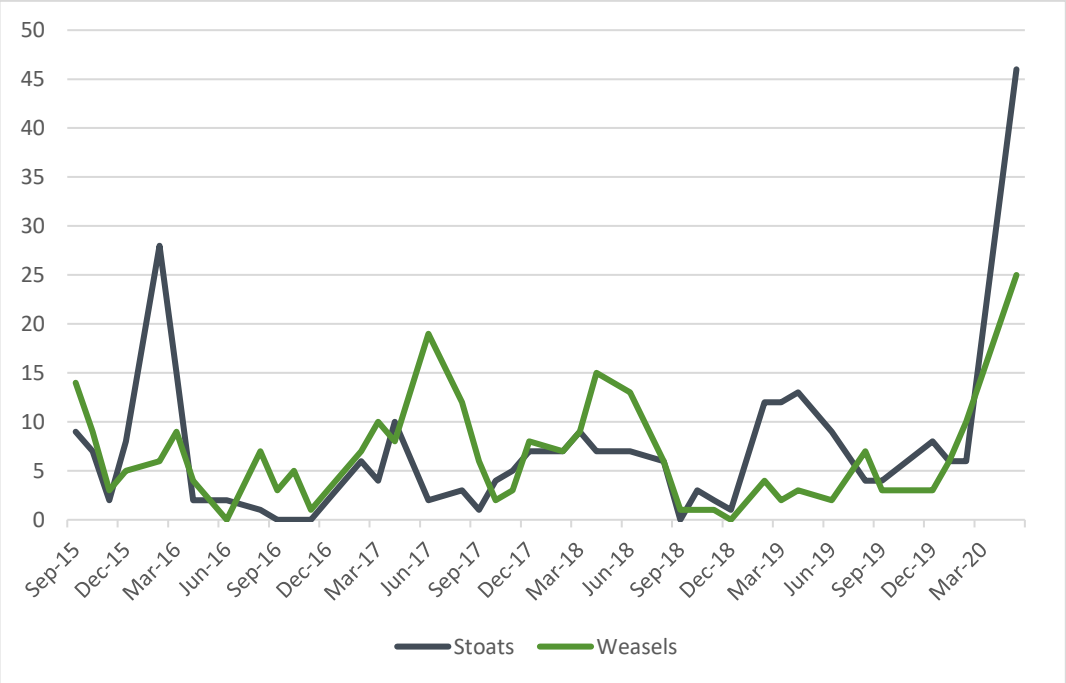

Figure 1. Stoat and weasel captures 2015 - 2020

3.2 Rat Control

The planned 1080 operation in response to the mast cycle took place in September in a combined operation with the Clinton Valley. This operation was aimed at providing a period of low rat numbers over the spring breeding period and to reduce stoat numbers. 26,834 ha were treated with 2kg/ha SR5 bait sown with a 100% overlap. This sowing rate was higher than originally planned (1.5kg/ha) due to the failure of earlier 1080 operations and caused 8,500ha less to be sown. The operation reduced rat tracking in the Eglinton Valley from 28% in July to 1% post op showing the operation was very successful.

As seen in previous years rat tracking then increased over the summer (31% in February) and remained high until May, with tracking at 40% valley wide. This prompted a second smaller 1080 operation to occur and in May 2020 7,587ha was treated with 1.9kg/ha SR5 sown with a 40% overlap. This operation was originally planned for March but was delayed

due to the COVID-19 outbreak. Post operation tracking showed this was successful in reducing rats from 43% to 3% in the treatment block.

Accompanying both 1080 operations roadside bait stations with pindone were used in an attempt to reduce the number of rats left behind in the road exclusion zone. This was acting on key lessons from previous operations.

Mouse tracking peaked at 79% in February 2020, and is trending downwards in the winter of 2020.

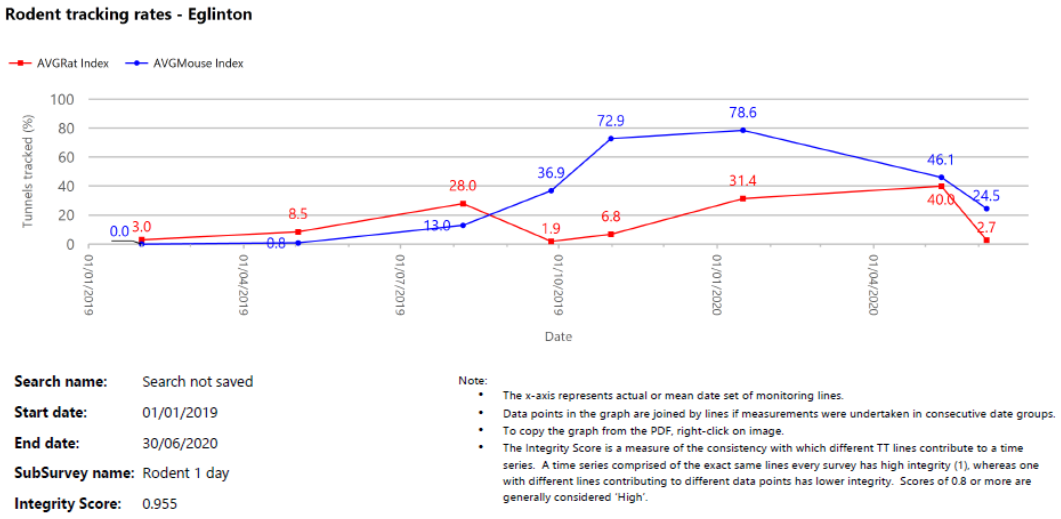

Figure 2. Eglinton Valley rodent tracking rates 2019-2020

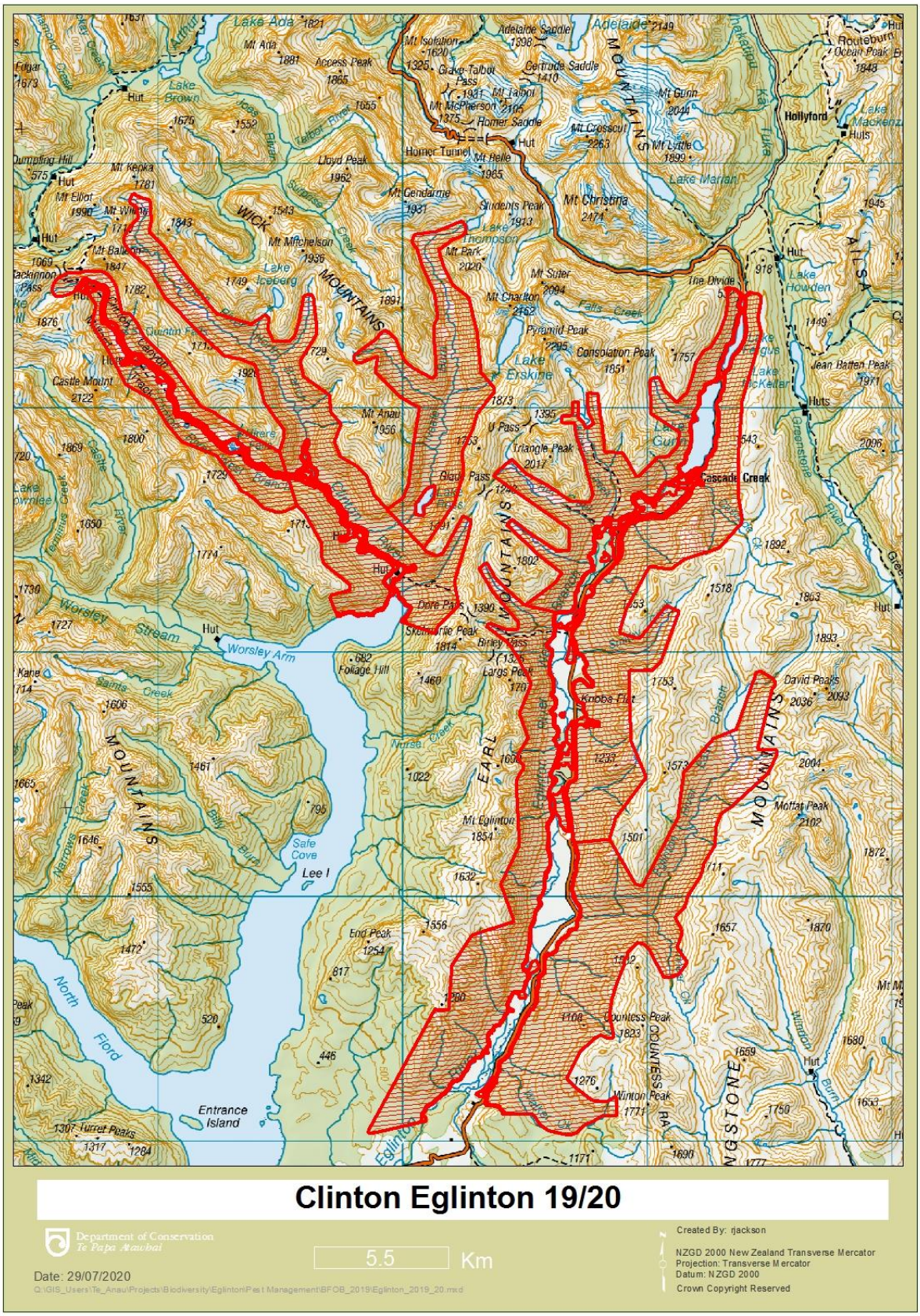

Figure 3. Clinton Eglinton 1080 operation September 2019

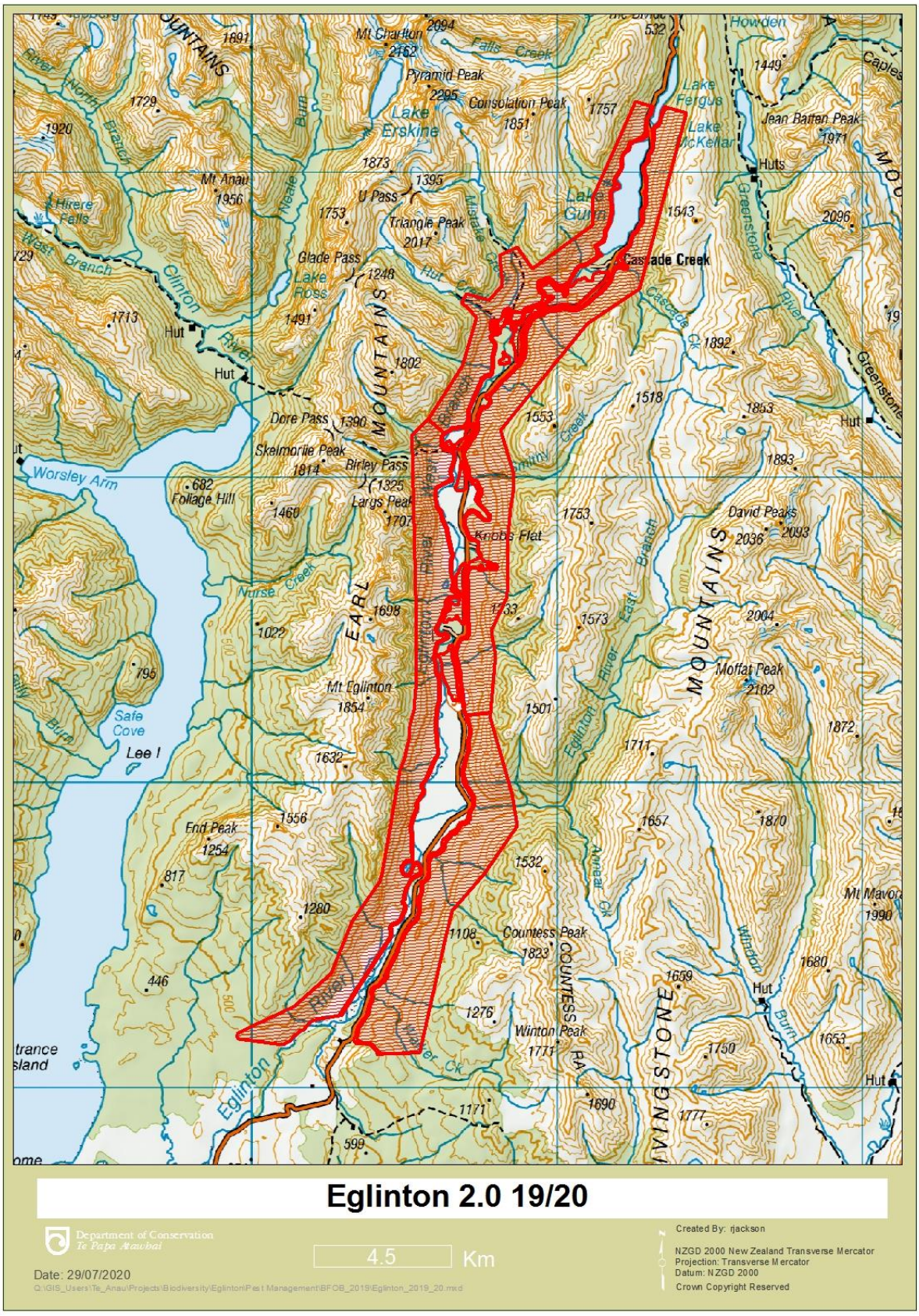

Figure 4. Eglinton 2.0 1080 operation May 2020

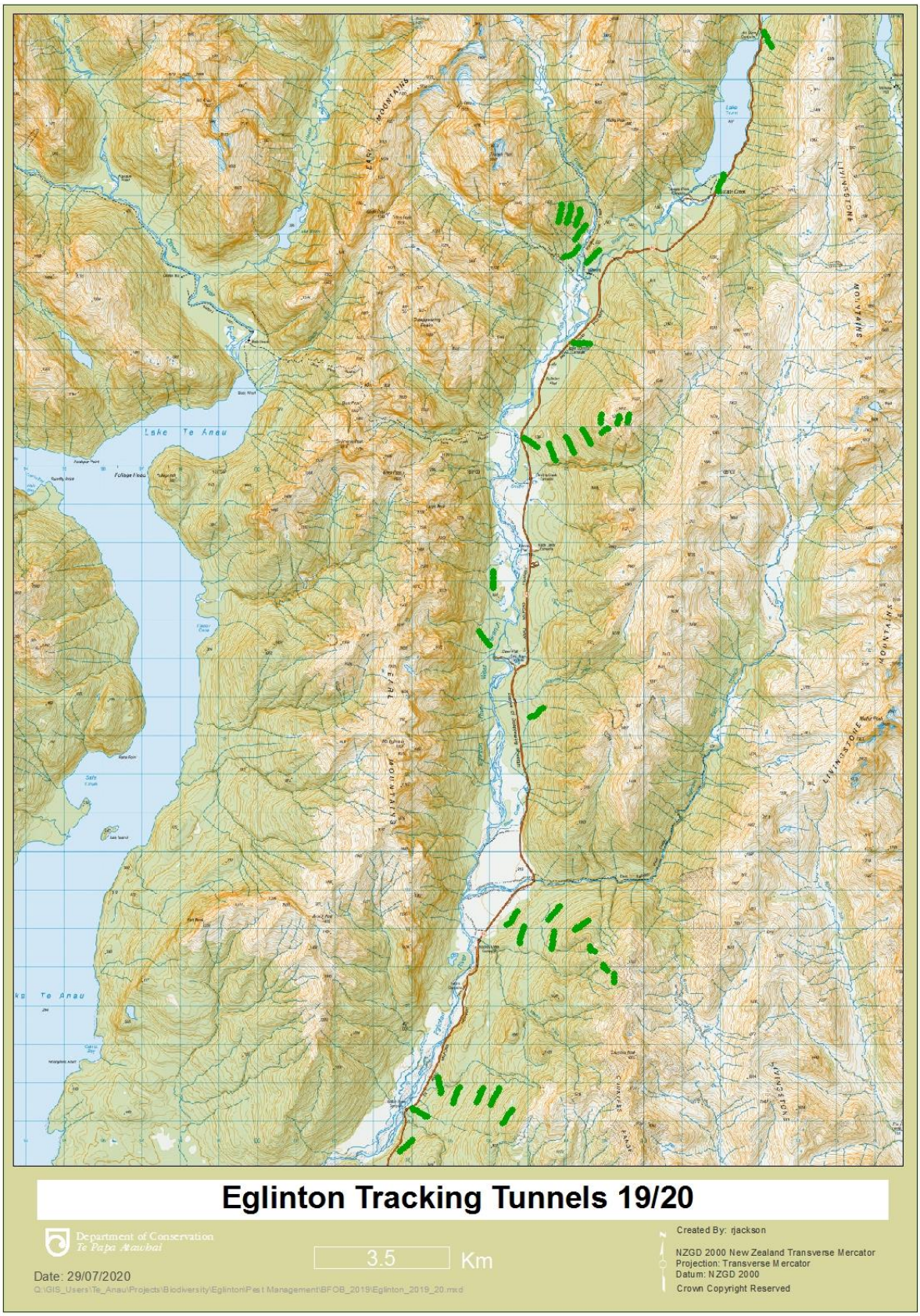

Figure 5. Tracking tunnel lines and bait station control area, lower valley.

3.3 Cat Control

Feral cats have been present in the Eglinton Valley for several years, and infrequent localised attempts to live capture them in cage traps have been made, with little success. Cats are known to be predators of species such as bats and terns and have the potential to kill many animals in one go though the exact impact cats are having on threatened species in the valley is unknown. Anecdotally cats have been increasing in the valley over time and are especially frequent around the public campsites.

Three types of kill trap make up the 33 cat traps in the valley; double conibear traps, Timms traps and SA2 traps. Cats have also been captured in stoat trap tunnels as non-target by-catch since the trapping programme began.10 cats were caught this season mainly in the specific cat traps. The number of cats caught in stoat traps has gone down over the last few years, which is thought to be due to older traps with larger openings being replaced.

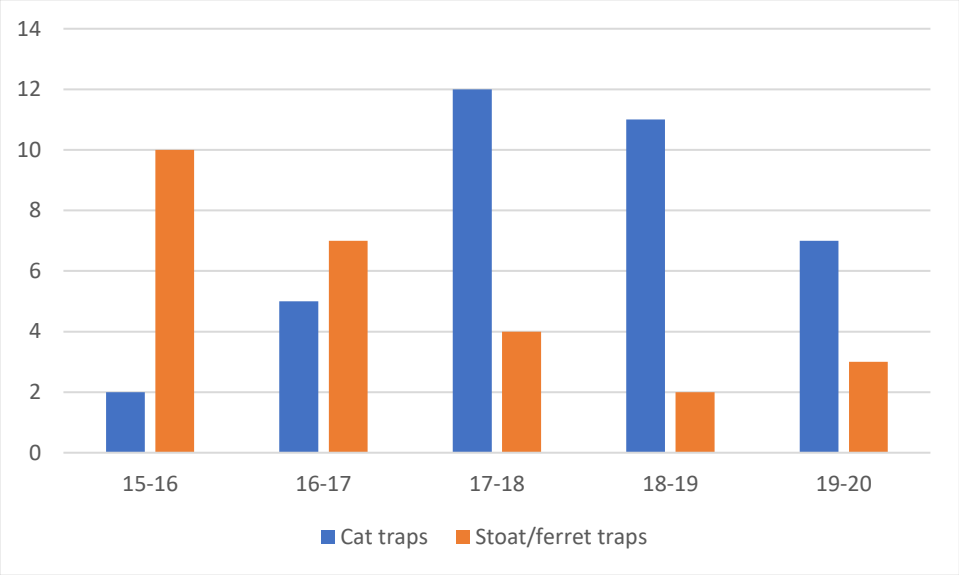

Figure 6. Cat captures in kill traps 2015-2020

4 Monitoring

4.1 Seedfall

Beech seedfall from May 2019 indicated a beech mast event, as predicted by modelling, see figure 8 below. Modelling predicted no mast event in 2020 though some silver beech seeding has been seen in the valley. Seedfall from May 2020 is yet to be confirmed through seed count data.

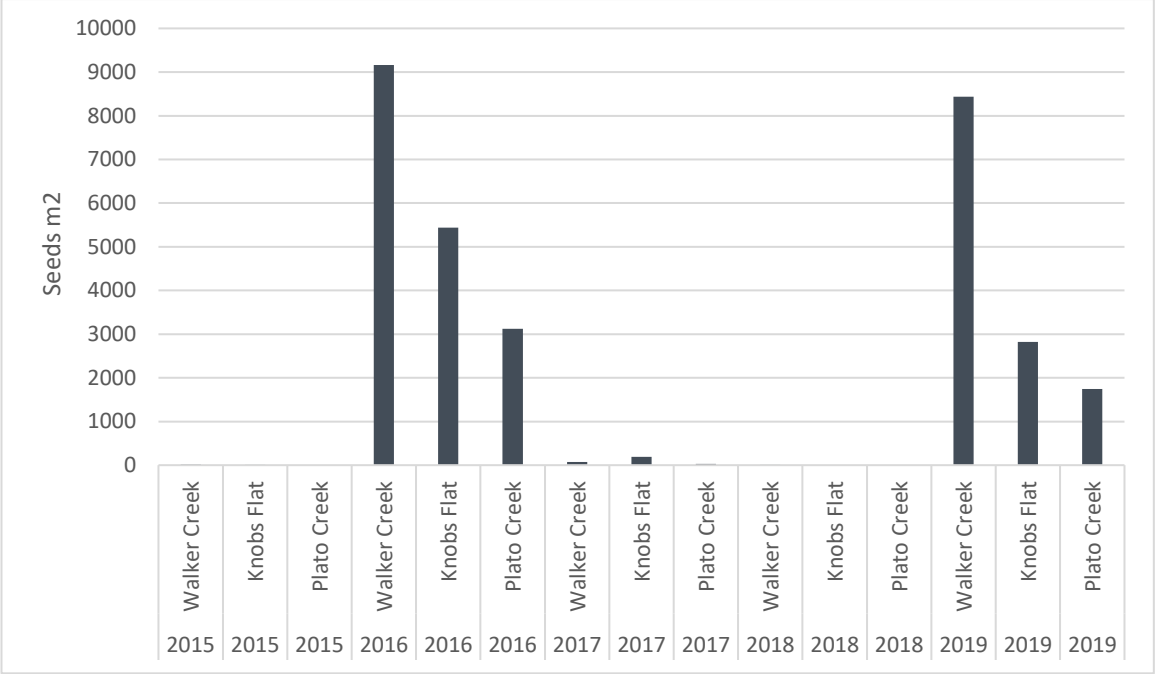

Figure 8. Seedfall data 2015 -2019

4.2 Southern Lesser Short-tailed Bats

The Eglinton Valley southern lesser short-tailed bat population is continuing to recover with high adult female survival recorded in 2018/2019 (90%) and 2019/2020 (preliminary data 91%). This follows aerial 1080 operations in spring 2016 and 2019 following beech mast event driven rat plagues and two pindone operations due to high winter rat tracking in spring 2017 and 2018. Passive Integrated Transponder (PIT) tags were inserted into 337 new bats this season with an additional out of season tagging session undertaken in March as part of the Australasian Bat Conference field trip. 1358 individually marked bats were recorded this season, the highest number to date. No particularly high roost emergence count was captured this year with 1672 being the highest obtained from three roost trees filmed on the same night. See Jackson and Pryde, 2020 for more information.

4.3 Long-tailed Bats

Annual monitoring undertaken by the Biodiversity Group has shown that long-tailed bat survival was poor in 2017 despite the 2016 1080 operation that took place in response to the 2016 beech mast event. Additionally, one of the two monitored colonies had poor survival in 2018 as well. Provisional data for 2019 indicates good survival for that year, though will need 2021's data to confirm. See figure 9 for more details.

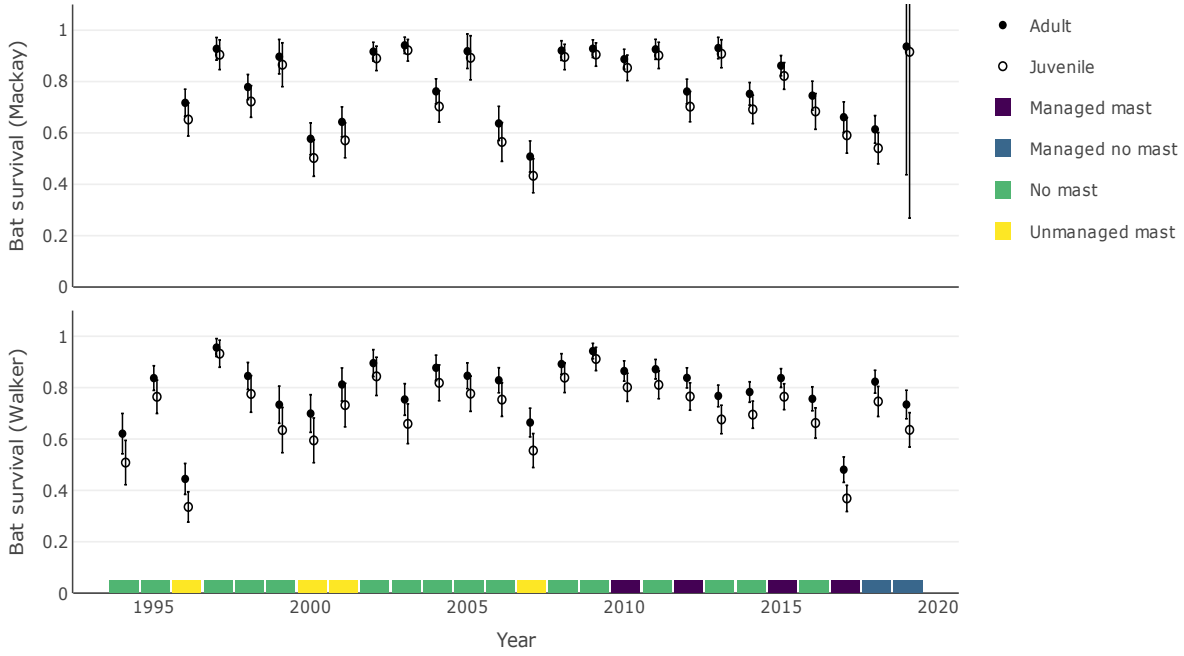

Figure 9. Survival of adult and juvenile female long-tailed bats at Walker Creek and Mackay Creek calculated using RMark. Coloured bars indicate the beech mast and management response in the preceding season. Values are means ± 95% confidence intervals.

4.4 Other Species

The Biodiversity group also undertake mohua and kaka monitoring in the valley and a brief summary is below. More information can be found in Greene 2019, Jones and Bowler 2020.

After mohua in the Eglinton Valley almost went extinct following the 1999/2000 double mast predator plague, several translocations have taken place to supplement the remaining population. This is one of the first mainland sites to have mohua translocated to them and has the aim of creating a self sustaining population in the valley. Mohua numbers appeared to have increased slightly from summer 18/19 (68 birds) to 19/20 with a minimum of 77 adults seen in the valley indicating that the population is holding steady but not thriving. While mohua appear to be breeding well, winter mortality is high and impacts the population though the cause of this high mortality is unknown. Monitoring is currently focussed on numbers of birds in the valley and no nest monitoring is being undertaken.

Kaka catching took place in 2017/2019 in order to attach transmitters and provide an updated sex ratio of bird, a measure of population health. The Eglinton now has a ratio of 1 female to 1.4 males and although this may not seem greatly improved, observations show that kaka are far more common than they used to be with flocks of 10 or more commonly seen in the valley. This clearly demonstrates that stoat and possum management in the Eglinton Valley is having positive effects on kaka populations there.

Location	No. of females identified	No. of males identified	Total	Sex ratio (F:M)
Eglinton pre 2010	31	50	81	1:1.6
Eglinton 2017/2019	42	58	100	1:1.4

Figure 10. Kaka sex ratios (from Greene 2019)

5 Public advocacy

Two "Bats and Banana splits" events were again held this summer allowing members of the public to learn about these species and view rangers undertaking their work. Having two events, doubling the number of people able to attend, was once again very successful in advocating bat and bird conservation to the local community.

6 Discussion

As predicted rodent numbers erupted following the 2019 beech mast event. This season there were two 1080 operations in an effort to curb rat numbers and prevent the poor long-tailed bat survival seen in 2017 after the 2016 mast event. The success of these operations in protecting long-tailed bats will not be known for another year or two when survival monitoring results can be confirmed.

Whilst the first 1080 operation in September 2019 was successful in reducing rat tracking to 1% tracking indices steadily increased over the summer. The driver of this increase is still not understood, though appears to be at least partially related to sustained predator control as this trend is only seen in the treatment area with an adjacent non treatment area not following the same pattern of rat tracking. Learnings from previous years rat tracking allowed this increase to be predicted and the second predator control operation undertaken. This represents a major step in our adaptive management approach, and the results of this summer's monitoring will inform how we manage this species at this and other sites through the species range.

Further research is still required to understand the mechanisms driving non-mast year rat irruptions at these sites. It is unknown how climate change and increased resource availability affect rat populations at these repeat predator control sites (either from removal of meso-competitors possums, or from general increased ecosystem health).

During 2017 and 2018 spring bait station operations were undertaken to curb high winter rat numbers, but still did not allow high long tailed bat survival. Therefore, this season's second rat control operation took place in autumn to see if this has an improved affect. Monitoring results over 2020/21 will help inform us of the autumn operations successfulness.

7 Recommendations

- Continue monitoring short and long tailed bats in the valley – the information provided by these programmes is critical to our understanding of how to protect these threatened species, at this site and others.
- If rat tracking follows the same pattern as 2017 and 2018 undertake predator control in autumn 2021 to prevent high rat numbers through winter and see how this corresponds with mohua and long-tailed bat numbers.
- Continue to upgrade and kea proof kill traps in the valley as opportunity allows.
- Develop and implement a landscape scale cat control programme.
- Begin a kea monitoring programme as part of the national Kea Survey Tool (survey.keadatabase.nz) with field workers collecting kea encounter rate data as they conduct other field work.
- Continue population monitoring of mohua to add to our understanding of how a mainland population recovery.

8 Acknowledgements

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Thank you to all the Biodiversity Group staff for all the work they undertake in the valley and the national Tiakina Nga Manu team for their support.

And thanks to all the local team for their efforts doing jobs big and small.

9 References

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